Epidemiologic Profile of HIV, STDs, TB, and Viral Hepatitis in North Dakota





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Introduction

The Epidemiologic Profile of HIV, STDs, TB, and Viral Hepatitis describes the epidemiology of HIV/AIDS, sexually transmitted diseases (chlamydia, gonorrhea and syphilis), tuberculosis (latent and active), hepatitis B, and hepatitis C in North Dakota during 2015. This profile covers the general epidemiology of diseases in terms of gender, age, race, geography, and associated casual factors. This profile was created to assist in developing a Comprehensive Jurisdictional Prevention and Care Plan. Information in this report is used to characterize and predict the changing epidemic at the local level. North Dakota data are summarized annually to help North Dakota's Department of Health answer questions about how to prevent these diseases in the population. Four sections focused around answering these key questions will be covered in this document:

- What are the socio-demographic characteristics of North Dakota's population?
- What is the epidemiology, including the geographical distribution, of HIV/AIDS, sexually transmitted disease, tuberculosis and viral hepatitis in North Dakota?
- What are the patterns of utilization of services throughout the state?

Table 1. Abbreviations used in this report

Abbreviation	Full description
PLWH	Persons living with HIV/AIDS
NDDoH	North Dakota Department of Health
HIV	Human immunodeficiency virus
AIDS	Acquired immunodeficiency syndrome
STD	Sexually transmitted disease
ТВ	Tuberculosis
HBV	Hepatitis B virus
HCV	Hepatitis C virus
ADAP	AIDS Drug Assistance Program
eHars	electronic HIV/AIDS Reporting System
EPT	expedited partner therapy
HRSA	Human Resources and Services Administration
CTR	Counseling, Testing, and Referral
PLWH	People Living with HIV/AIDS

Data Sources

Data were compiled from a number of sources to present the most complete picture of the epidemiology of diseases as possible. However, because few behavioral or supplemental surveillance projects are available in North Dakota, core surveillance data will be utilized extensively. Each data source has strengths and limitations. A brief description of each source follows.

HIV/AIDS Data Sources

HIV / AIDS Case Surveillance

A diagnosis of HIV/AIDS is mandatory reportable to the NDDoH according to North Dakota Century Code Chapter 23-07-01 and North Dakota Administrative Code Chapter 33-06-01. Reports of HIV/AIDS cases can be provided by physicians, hospitals, laboratories, and other institutions. These data are stored in electronic HIV/AIDS Reporting System (eHARS) and MAVEN databases. Statistics and trends presented in this report were derived from HIV/AIDS case data reported to the NDDoH cumulatively from 1984 through Dec. 31, 2015.

HIV Counseling and Testing Data

Counseling, Testing, and Referral (CTR) system

The NDDoH funds 22 free, confidential HIV testing and counseling sites in North Dakota, and holds contracts with all sites to provide rapid testing. Participants complete risk assessments as part of a testing visit or during outreach. Risk factors of the patients that receive tests through this program are reported to NDDoH.

HIV Care Data

Ryan White Part B Program

North Dakota Ryan White Part B Program (formerly known as North Dakota CARES) assists low-income North Dakota residents living with HIV or AIDS to access confidential health and supportive services. The program was implemented in 1991. In order to participate in the North Dakota Ryan White Part B Program, one must be a resident of North Dakota, have a gross income less than 400 percent of the current Federal Poverty Level, and have proof of HIV infection.

Part B services include core and supportive medical services. Core services include outpatient/ambulatory medical services, AIDS Drug Assistance Program (ADAP), oral health care, health insurance premium assistance, mental health services, and medical case management. Supportive services include non-medical case management, housing services, medical transportation services, and emergency financial assistance.

The Ryan White Part B Program implemented the surveillance system MAVEN for client data management in 2012. MAVEN hosts HIV prevention, surveillance, and Ryan White data, and has created a seamless integration and sharing of information between these programs. MAVEN also hosts data from all Part B providers, including the ADAP. Utilization of the current version of MAVEN will ensure that all required client-level data elements will be collected by providers and reported to HRSA. The "real time" nature of the networked system allows the Ryan White Part B Program to monitor specific indicators more closely (e.g., number of clients without medical insurance), and gives case managers access to view lab work and medication so that clients can be served more effectively.

MAVEN allows agencies to share of information, thereby improving timeliness, access and to care and medication, and tracking of quality indicators. Information collected from the service providers includes basic demographic and risk information, eligibility verification data (e.g. current address, income, insurance information and policy numbers), the type of services received, the date and quantity of services received, the cost of these services, the name of agency and case manager that provided these services, and other pertinent information (e.g. history of substance abuse or mental health treatment, veteran status). Each client is assigned to their case manager in MAVEN. The surveillance program collects additional information (e.g. pregnancy status, HIV diagnosis date, lab work), and the prevention program collects partner information. The data indicate which Ryan White resources are being used, how often, and by whom. However, these data only reflect persons who (1) know their HIV sero-status, (2) are currently seeking care and treatment services from Ryan White Part B-funded providers, and (3) are financially eligible to receive services.

STD Data Sources

STD Surveillance Case Reporting

The NDDoH STD Prevention Program conducts statewide surveillance to determine the number of reported cases of STDs. These data are used to monitor trends and to offer voluntary partner counseling and partner notification services. Chlamydia, gonorrhea, and syphilis cases are mandatory reportable conditions in North Dakota. STD surveillance data can

serve as surrogate markers for unsafe sexual practices and may demonstrate changes in behavior among specific populations that increase their risks for HIV infection. Because of a shorter time from infection to symptomatic disease, STD diagnoses may better indicate recent unsafe behavior and/or changes in community norms. In addition, certain STDs can facilitate the transmission of HIV infection.

Tuberculosis Surveillance Data

Tuberculosis (*Mycobacteria tuberculosis* and *Mycobacteria bovis*) is a mandatory reportable disease and must be reported to the NDDoH according to North Dakota Administrative Code Chapter 33-06. Reports of active and latent TB cases are provided by physicians, laboratories, and local public health units. These data are stored in MAVEN, creating an integrated electronic disease surveillance system.

Viral Hepatitis Surveillance Data

The Hepatitis Program receives reports of hepatitis B and C acute and chronic infections from various reporting sources. Hepatitis B infections are investigated to determine if post-exposure immune-prophylaxis procedures for contacts were followed. Females of child-bearing age, 14-44 years, that are hepatitis B positive, are followed-up to determine if they are pregnant. Pregnant females who are hepatitis B positive are then followed by the perinatal hepatitis B prevention coordinator in the immunization program. The coordinator ensures the hospital has hepatitis B immune globulin (HBIG) for administration to the baby at time of delivery. The coordinator also confirms the baby is given the hepatitis B vaccine series and ensures serology testing is done at completion of the vaccine series to ensure the child is not infected and is immune to the hepatitis B virus.

Cases of hepatitis C that are reported as acute are followed by a case investigation. Cases of hepatitis C that were contracted in the past are reported as chronic hepatitis C. For chronic cases, interviews and partner notification are not conducted by the health department, and only demographic information is collected. Under-reporting of both acute and chronic hepatitis C infections in North Dakota is likely. Data reported here do not distinguish between resolved and active infections.

Vital Statistics Data

Birth and Death Data

NDDoH Division of Vital Statistics collects information on all births and deaths in North Dakota. The birth certificate form includes demographic information on the newborn infant and the parents, prenatal care, maternal medical history, mode of delivery, events of labor,

and abnormal conditions of the infant. Death certificates include demographics, underlying cause of death, and factors contributing to the death. The surveillance program reviews death certificates on a weekly basis to ascertain deaths of HIV positive persons. The surveillance program also electronically matches data with death and birth databases annually to ascertain deaths of persons with HIV/AIDS and births to HIV-infected females.

Demographic Data

U.S. Census Bureau

The Census Bureau collects and provides timely information about the people and economy of the United States. The Census Bureau website (http://www.census.gov) includes data on demographic characteristics (e.g., age, race, ethnicity, and sex) of the population, family structure, educational and income level, housing status, and the proportion of persons who live at or below the poverty line. Summaries of the most requested information for states and counties are provided, as well as analytical reports on population changes, age, race, family structure, and apportionment. State- and county-specific data are easily accessible, and links to other web sites with census information are included.

Guidelines to Interpretation of the Data

Decisions about how to allocate limited resources for prevention and care services depend, in part, on appropriate interpretation of epidemiological data. The following guidelines are intended to facilitate proper interpretation of the tables and figures presented in this profile.

These data have certain limitations. This report will not specifically differentiate, unless indicated, whether or not an individual is or is not at the stage of AIDS for HIV infections. The first AIDS case reported in North Dakota was diagnosed in 1984. Reporting of HIV-infected persons in North Dakota began in 1984. HIV surveillance reports may not be representative of all infected persons because not all infected persons have been tested or reported. Data are collected for the entire state of North Dakota, which include patients who are diagnosed for the first time in North Dakota, as well as patients who move to North Dakota after they have been diagnosed. Data do not necessarily take into account emigration out of North Dakota, although efforts are made to account for this in HIV prevalence data. State and county of diagnosis do not change even if a person moves to a different county or out of state.

Results that contradict or do not agree with those from other sources should be examined carefully. All data sources are not equivalent in how they can be generalized to the population of North Dakota. In particular, scientific studies should be examined for their purposes and for the population studied. Where scientific studies are presented, their limitations will be included in the discussion.

Diagnosis rates have been calculated for 12-month periods per 100,000 persons. The denominator for calculating rates, unless otherwise noted, is based on 2015 population estimates from the U.S. Bureau of Census. One exception to this is the North Dakota population by race, which uses available 2014 data. The numerator is the number of cases reported during the 12-month period. This number is divided by the population estimate and multiplied by 100,000. For example, race-specific rates are the number of cases reported for a particular racial/ethnic group during the preceding 12-month period divided by the estimated population for that race/ethnicity, and multiplied by 100,000.

SECTION 1: CORE EPIDEMIOLOGY IN NORTH DAKOTA

Question 1: What are the socio-demographic characteristics of North Dakota's population?

This section provides background information about North Dakota's population. The purpose is to provide a context for assessing the potential impact of HIV/AIDS, sexually transmitted disease, tuberculosis, and viral hepatitis.

Section Highlights

- The 2015 census from the U.S. Census Bureau reports that 756,927 people reside in North Dakota, ranking it 47th in the nation in population. Eighty-six percent of the total population is white, non-Hispanic, and approximately 14 percent are of other racial or ethnic minority groups.
- Of North Dakota's 53 counties, the 10 most populous—Cass, Burleigh, Ward, Grand Forks, Williams, Stark, Morton, Stutsman, Richland, and Rolette—account for 75 percent of the total population.

North Dakota Demographics

North Dakota is a rural state that covers 70,704 square miles and in 2015 had a population of 756,927, according to the U.S. Census Bureau. North Dakota ranks 47th in the nation by population. It contains 53 incorporated counties; 13 cities have populations above 10,000; 33 cities have populations above 2,500. County populations in North Dakota range from 767 to 171,512 people. The six counties along the eastern border with Minnesota account for over one-third of the state's population.

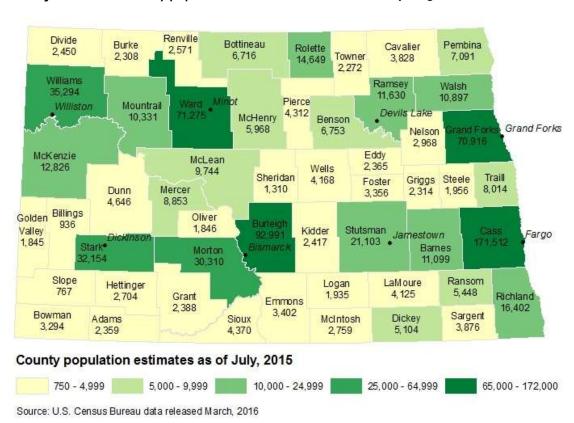


Figure 1. Major cities and county population estimates of North Dakota, 2015

Age and Gender Distribution

At the time of the 2015 U.S. Census, North Dakota's population was 51 percent male and 49 percent female, a distribution that has been consistent for at least six years. Over one quarter of North Dakota's population is over the age of 55. Of the remaining 75 percent, adults ages 20 to 24 are disproportionality represented. Within that group, there are 15 percent more males than females. The largest discrepancy between males and females are between the ages of 25 and 29, where there are 25 percent more males than females.

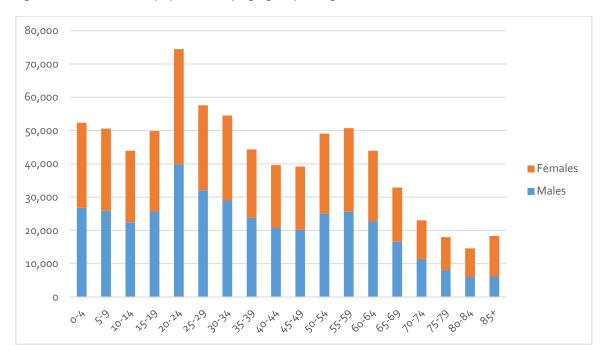


Figure 2. North Dakota population by age group and gender, 2015

Race Distribution

The majority of North Dakota's population reports white (89.6 percent) as their race. The largest minority group is America Indian and Alaskan Natives, accounting for 5.4 percent, most of whom reside in Rolette and Sioux counties. The African American/Black population follows, accounting for an estimated 1.8 percent of the total population.

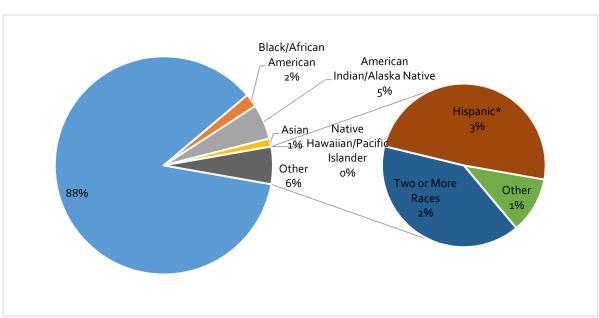


Figure 3. North Dakota population by race, 2014

Table 2. North Dakota population by race, 2014

2014 North Dakota Population by Race	Number	Percent
White, alone	654,375	88 %
Black/African American	14,910	2 %
American Indian/Alaska Native	39,669	5 %
Asian	8,899	1 %
Native Hawaiian/Pacific Islander	173	0 %
Other	4, 680	1 %
Two or More Races	16,776	2 %
Hispanic*	20,618	3 %

^{*}Hispanics may be of any race and are also included in other applicable race categories

Social Characteristics

The social characteristics of North Dakota include education, place of birth, and poverty level. A majority (90.9 percent) of the population age 25 and older had graduated from high school, according to 2014 census estimates. The percent of the population born in a country other than the United States is 2.7 percent. Nearly 88,000 (11.9 percent) of individuals live on wages below the federal poverty level. For a household of one, that equates to approximately \$11,490 per year.

Question 2: What is the epidemiology, including the geographical distribution, of HIV/AIDS, sexually transmitted disease, tuberculosis, and viral hepatitis in North Dakota?

This section presents data on who is infected, how they became infected, where cases are occurring, and how these data may be changing over time.

Section Highlights

HIV

- In 2015, 30 new HIV/AIDS cases were diagnosed in North Dakota, the highest ever reported In North Dakota since HIV reporting began in 1984.
- Diagnoses of HIV and AIDS occurred mostly among males in 2015; the age range for newly diagnosed HIV cases in males was 19 to 63, with relatively even distribution across age ranges.
- Median age at diagnosis of HIV for newly diagnosed cases in North Dakota was 34 in 2015.
- MSM remains the predominant risk category. In 2015, 30 percent of all new diagnoses reported MSM as a risk factor for infection.
- New cases are no longer clustered in population centers in North Dakota, but are seen in most regions of the state.

Chlamydia, Gonorrhea, and Syphilis

- In 2015, 3,183 cases of chlamydia were reported, a slight decrease from 3,417 cases reported in 2014.
- There were 687 cases of gonorrhea reported, showing no change from 2014.
- In 2015, 43 cases of syphilis were reported. This represented a slight decrease from 50 cases in 2014. Of the 43 cases reported in 2015, 29 were primary, secondary, or early latent stage. Three-quarters of syphilis cases were in males.

TB

In 2015, nine cases of active tuberculosis infections were reported. This is a decrease from 16 in 2014.

Viral Hepatitis

• In 2015, 99 cases of Hepatitis B (HBV) infection and 1,063 reports of past or present Hepatitis C (HCV) were reported.

Human Immunodeficiency Virus (HIV)

Total Reported Cases of HIV Infection

There were 86 reported cases of HIV/AIDS in North Dakota in 2015. Figure 4 shows the number of cases new to North Dakota since 2000. This includes not only cases newly diagnosed in North Dakota, but also persons who moved into the state with an established infection during the year. HIV/AIDS has been a reportable condition in North Dakota since 1984.

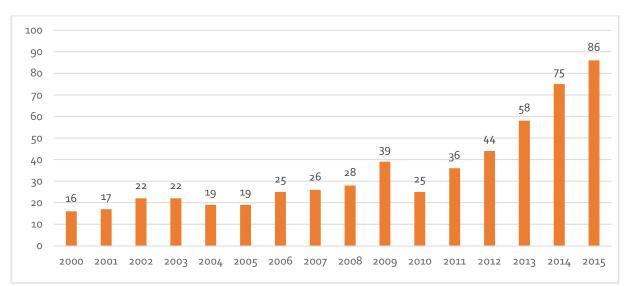
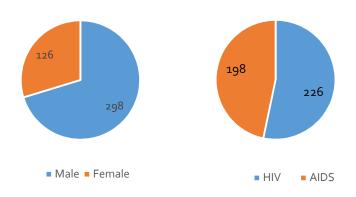


Figure 4. New cases of HIV/AIDS diagnosed or moved to North Dakota, 2000-2015

There are 424 people with HIV/AIDS known to be living in North Dakota as of December 31, 2015. Of those, 226 are at the stage of HIV infection and 198 have progressed to an AIDS diagnosis. The group is made up of 298 males and 126 females.





Age

One-quarter of those reporting as HIV positive are between the ages of 35 and 44, and one-third are between the ages of 45 and 54. The predominant self-identified risk factor for males at the time of diagnosis is men who have sex with males, at 58 percent of cases. In females, the predominant self-identified risk factor is heterosexual contact, at 83 percent of cases.

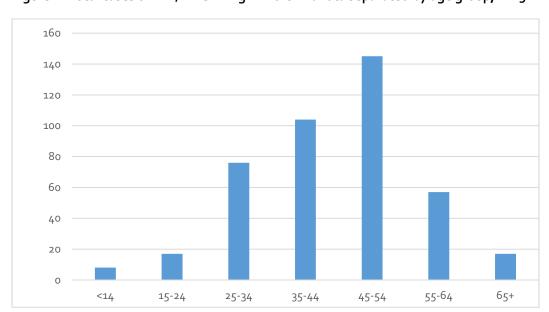
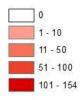


Figure 6. Total cases of HIV/AIDS living in North Dakota separated by age group, 2015

Divide Bottineau Burke Pembina Cavalier Renville Rolette Walsh Williams Ramsey Pierce McHenry Mountrail Benson Grand Forks Nelson McKenzie Eddy McLean Wells Sheridan Traill Steele Foster Griggs Dunn Mercer Oliver Golden Billings Valley Kidder Stutsman Burleigh Barnes Stark Morton Ransom Slope LaMoure Logan Hettinger Grant Richland Emmons Bowman Dickey Sargent McIntosh Adams Sioux

Figure 7. Total cases of HIV/AIDS living in North Dakota by county, 2015

Number of cases



2015 Incidence of HIV/AIDS

Incidence refers to cases newly diagnosed within the state during a given year. Persons that have been diagnosed in another state, then move to North Dakota, are not counted in an incidence report. However, persons that were diagnosed in a foreign country and then move directly to North Dakota are included in the incidence report.

Gender

North Dakota reported 30 new cases of HIV/AIDS in 2015. Twenty-three (77 percent) of the newly diagnosed HIV/AIDS cases were males.



Figure 8. Gender of HIV/AIDS cases diagnosed in North Dakota, 2011-2015

Age

In 2015, the age range of newly diagnosed HIV cases was 7 to 64 years old, with a mean age of 34.

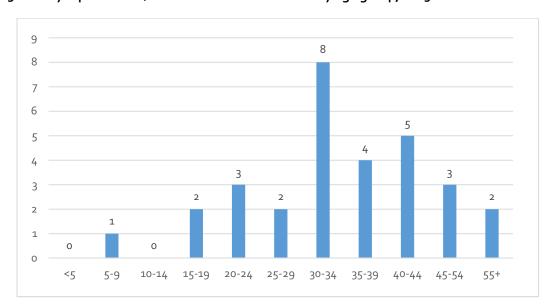
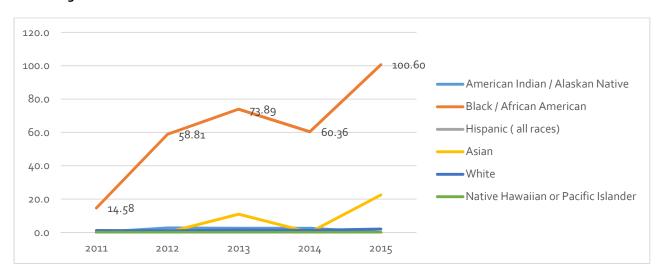


Figure 9. Newly reported HIV/AIDS cases in North Dakota by age group, 2015

Race

In 2015, the race most reported by cases was Black/African American, which accounted for 15 (50 percent) cases. Census estimates from 2014 show that Black/African Americans comprise less than 2 percent of the population in North Dakota, accounting for an incident rate of 100 infections per 100,000 persons. White Americans had the second highest number of reported HIV cases, with 13 reported.

Figure 10. Newly reported HIV/AIDS cases rate per 100,000 persons in North Dakota by race group, 2011-2015



Country of birth

Half of new cases diagnosed in North Dakota were born outside of the U.S. This includes 13 of the 15 newly reported cases among Black/African Americans.

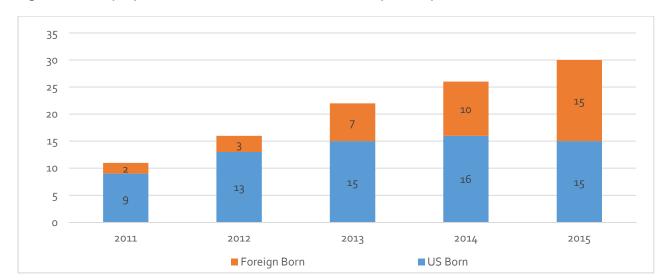


Figure 11. Newly reported HIV/AIDS cases in North Dakota by country of birth, 2011-2015

Geography

The map below shows the seven counties in which at least one new case of HIV was reported in 2015. The maximum number of new cases per county was 12.

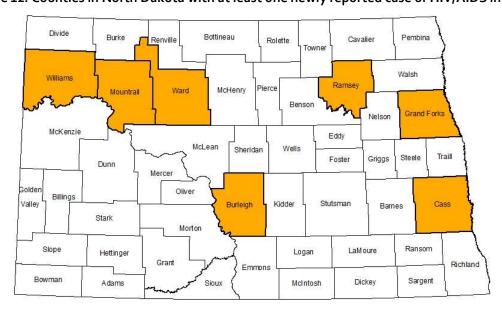


Figure 12. Counties in North Dakota with at least one newly reported case of HIV/AIDS in 2015

Risk of Infection

Nationally, HIV is most often reported among men who have sex with men (MSM). North Dakota risk data shows similar patterns between both prevalent cases and incident cases among males from 2011-2015. In female cases diagnosed with HIV in North Dakota, heterosexual contact remained the primary risk factor. No females reported use of injection drugs in the past five years. Below are depictions of the self-identified risk factors among newly diagnosed cases.

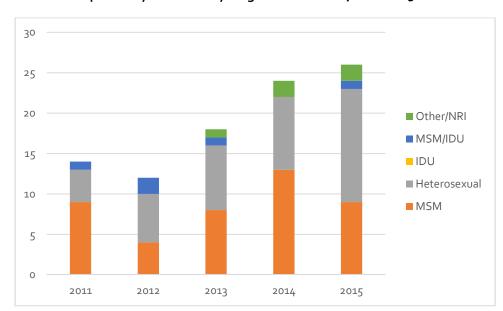
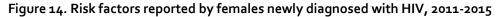
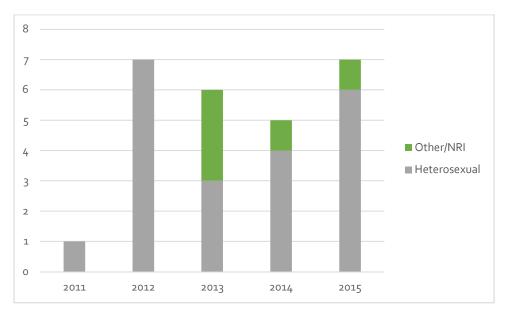


Figure 13. Risk factors reported by males newly diagnosed with HIV, 2011-2015





Factors Affecting the Number of Diagnoses

Although HIV diagnoses are one indication of HIV infection rates, they do not present the complete picture. Many factors may affect when or if a person gets tested for and diagnosed with HIV infection. Many service providers note the following barriers to HIV testing:

- a general lack of knowledge about how HIV is transmitted
- an individual's belief that he/she is not at risk for contracting HIV (perceived risk)
- logistical barriers, such as proximity to testing sites, transportation, and limited hours of operation
- language barriers
- pervasive stigma associated with HIV

The impact of testing barriers on the state's capacity to identify cases of HIV may be significant. Individuals who are infected and do not know they are infected may not seek testing unless they have the means, the knowledge, or a significant reason (e.g., symptoms) to do so. Considering these possible limitations, studying a broad sample of directed testing efforts is, to some degree, an examination of the potential prevalence of the disease. In 2015, the NDDOH funded 22 free, confidential HIV counseling, testing, and referral (CTR) sites.

Sexually Transmitted Diseases (STDs)

Chlamydia

In 2015, 3,183 chlamydia cases were reported in North Dakota, a rate of 420.5 cases per 100,000 persons. North Dakota ranks 25th in the U.S. for rates of chlamydia. Chlamydia cases have increased by 30 percent since 2011, despite a decrease in cases from 2014 to 2015.

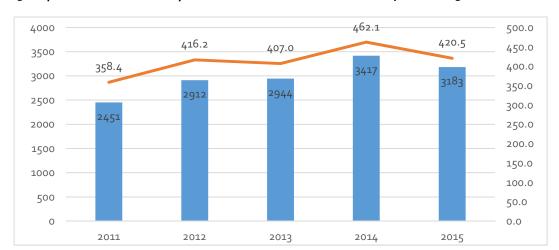


Figure 15. Reported cases of chlamydia and North Dakota incident rate, 2011-2015

Gender

Of the cases reported, 2,042 (64 percent) were females. This is expected as females are more frequently screened for the disease through annual gynecological visits and prenatal care than are males.

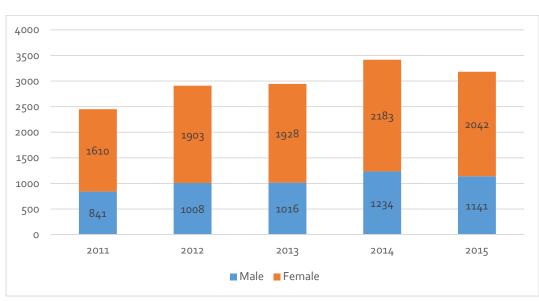


Figure 16. Reported cases of chlamydia by gender, 2011-2015

Age

The majority of chlamydia cases since 2011 have been in adults between the ages of 20 and 24. In prior years, the second highest age category has been teenagers ages 15 to 19. However, in 2015, cases in the teenage age group were approximately equal to those in 25 to 29 age group. This is also reflected in the trend of increasing mean age of cases over time in both males and females. Male cases of chlamydia are on average older than female cases.

Figure 17. Chlamydia cases by age and gender, 2015

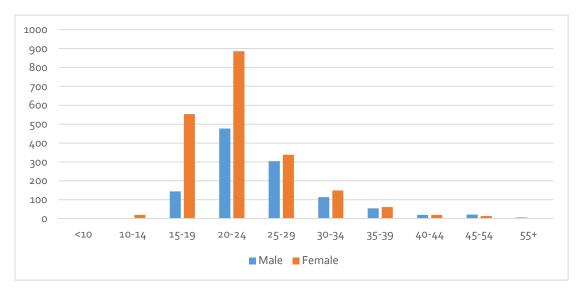
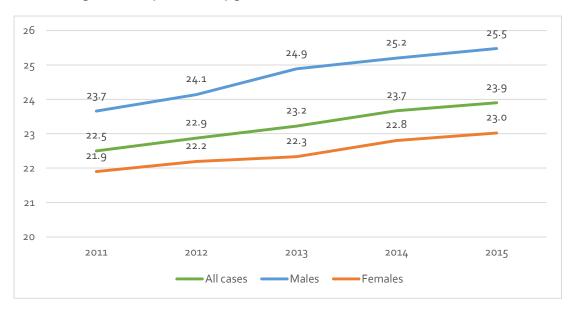


Figure 18. Mean age of chlamydia cases by gender, 2011-2015



Race

Of cases with known race, 1,804 (56.6 percent) cases were reported for whites, followed by American Indians with 563 (17.7 percent), Black/African Americans with 337 (11 percent), and Asians with 32 (1 percent). The highest chlamydia rate in North Dakota for 2015 was reported in Native Hawaiians. This was a data anomaly and not shown in the figure because there were few cases among a small resident population in North Dakota. Among Black/African Americans, the rate was 2,233 per 100,000 persons. American Indians had a rate of 1,422 cases per 100,000 persons. The rate among whites in 2015 was 276 per 100,000 persons. The rate of chlamydia cases overall for North Dakota in 2015 was 420.5 cases per 100,000 persons, a decrease from a high of 462.1 in 2014. Rates continue to indicate that minority populations are disproportionately affected by STDs.

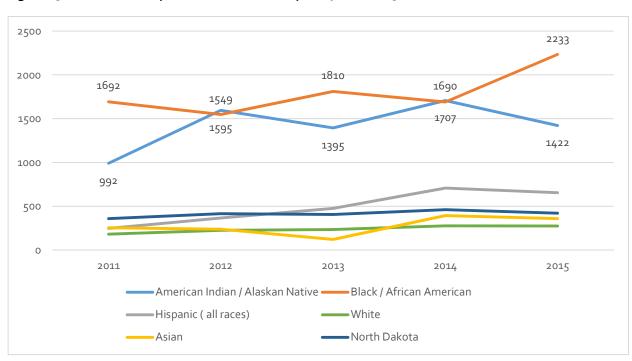


Figure 19. Rates of chlamydia in North Dakota by race, 2011-2015

Geography

In 2015, chlamydia was diagnosed in residents of 52 of 53 counties. Slope County has not had a case of chlamydia since 2011. Overall incidences of chlamydia cluster near population centers. Ten counties in North Dakota had chlamydia rates higher than the overall rate of 420.5 cases per 100,000 persons. The three counties with the highest chlamydia rates all have high American Indian populations, which are disproportionately affected by chlamydia.

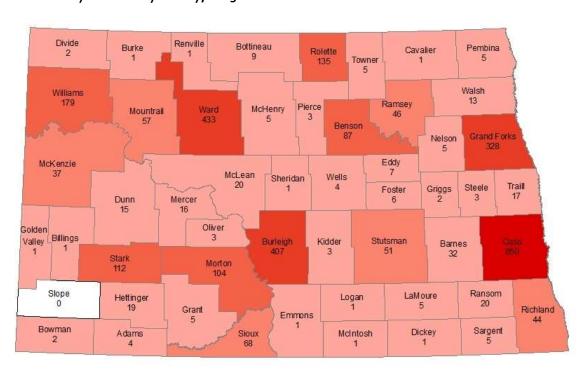


Figure 20. Chlamydia cases by county, 2015

Table 3. Counties in North Dakota with Chlamydia Rate Higher than overall North Dakota Rate

County	Rate	Number of cases
Sioux	1556.1	68
Benson	1288.3	87
Rolette	921.6	135
Hettinger	702.7	19
Ward	607.5	433
Mountrail	551.7	57
Williams	507.2	179
Cass	495.6	850
Grand Forks	462.5	328
Burleigh	437.6	407

Factors Affecting the Number of Diagnoses

One important factor that could influence the overall greater number of reported chlamydia cases since 2011 is an increase in chlamydia testing across North Dakota. Although NDDoH has testing data for several facilities, the NDDoH does not have access to the number of tests performed for most private health facilities, as many do not utilize the NDDoH for STD testing. The laboratory data provided to NDDoH indicates that the number of private clinics utilizing the Division of Laboratory Services has decreased over the last five years.

In addition to increasing chlamydia among disproportionately affected populations, the level of partner services can also impact the incidence of chlamydia in the community. The percent of female cases reported is much greater than that of males, but it is suspected that there are many infections undiagnosed among males. The inability for the NDDoH and healthcare providers to complete partner services for all chlamydia cases is one of the reasons for undiagnosed cases among males and other individuals at risk for chlamydia. Partner services for chlamydia are provided by the NDDoH only for those who are diagnosed with pelvic inflammatory disease, or are under the age of 14, or are pregnant.

One method to improve partner services for chlamydia would be the utilization for expedited partner therapy (EPT). A goal of the STD prevention program is to improve utilization and reporting by providing education to healthcare providers about EPT.

Gonorrhea

Gonorrhea cases in North Dakota have increased an average of 40 percent each year from 2011 to 2014, but appear to have plateaued and slightly decreased since 2014. In 2015, 687 cases of gonorrhea were reported. Coupled with an increase in overall population, this led to a slight decrease in gonorrhea rates in 2015, to 90.8 per 100,000 people.

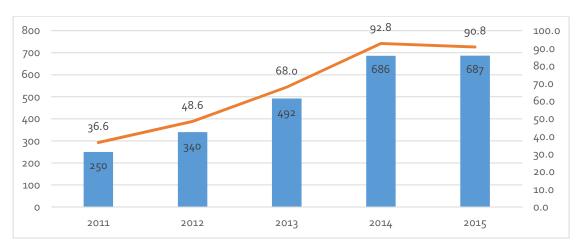


Figure 21. Gonorrhea cases and North Dakota rate, 2011-2015

Gender

Consistently more cases of gonorrhea are reported among females than males. In 2015, 381 (55 percent) occurred among females and 306 cases occurred among males. This is expected as females are more frequently symptomatic of the disease than males, although many females report no symptoms of infection. Females also have more regular screening by physicians through annual gynecological visits and prenatal care.



Figure 22. Gonorrhea cases by gender, 2011-2015

Age

Young people continue to be disproportionally affected by gonorrhea in North Dakota and in the United States. The majority (60 percent) of gonorrhea cases reported in 2015 were in individuals ages 20 to 29 years old. Three females between the ages of 10 and 14 were diagnosed with gonorrhea in 2015. The average age of a gonorrhea case increased by nearly two years between 2014 and 2015, from 24.9 to 26.8 years. Male cases are on average older than female cases.

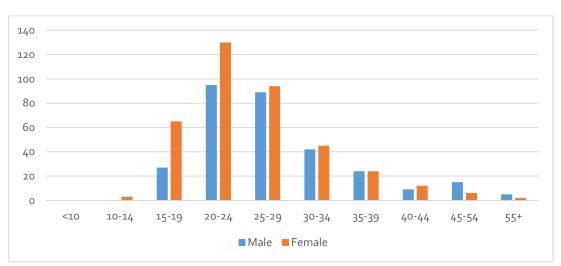
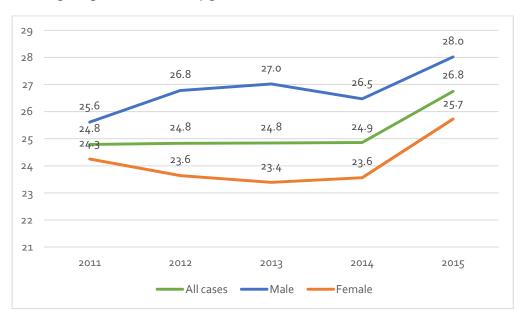


Figure 23. Cases of gonorrhea by age and gender, 2015





Race

The majority of gonorrhea cases, 273, were reported among American Indians/Alaskan Natives, followed by whites with 256 cases. Black/African Americans accounted for 87 cases. As with chlamydia, gonorrhea rates continue to reflect disparity among minority racial and ethnic groups. The gonorrhea rate among American Indians in 2015 was 688 cases per 100,000 persons, and 584 cases per 100,000 persons for Black/African Americans. The rate among whites in 2015 was 39 cases per 100,000 persons, and the rate for all of North Dakota was 91 cases per 100,000 persons.

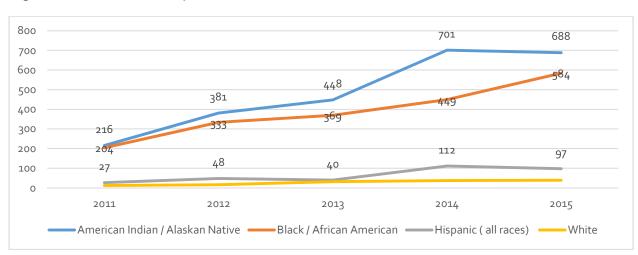


Figure 25. Gonorrhea rates by race, 2011-2015

Geography

In 2015, gonorrhea cases were reported in 28 counties, a decrease from 31 counties in 2014. Rolette County reported the highest gonorrhea rate, with 901 cases per 100,000 persons, followed by Sioux and Benson County with rates of 458 and 429 cases per 100,000 individuals, respectively.

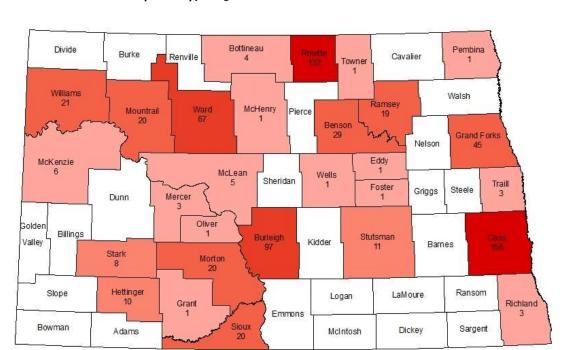


Figure 26. Gonorrhea cases by county, 2015

Table 4. Counties in North Dakota with a Gonorrhea Rate Higher than overall North Dakota Rate

County	Rate	Number of cases
Rolette	901.1	132
Sioux	457.7	20
Benson	429.4	29
Hettinger	369.8	10
Mountrail	193.6	20
Ramsey	163.4	19
Burleigh	104.3	97
Ward	94.0	67
Cass	91.0	156

Factors Affecting the Number of Diagnoses

One important factor that could be affecting the rising number of gonorrhea cases since 2011 is the increase in gonorrhea testing across North Dakota. The North Dakota Department of Health Division of Laboratory Services makes testing data available to the Division of Disease Control.

The available laboratory data does not provide a detailed picture of testing practices that occur throughout the state. The majority of gonorrhea diagnosed in North Dakota in 2015 occurred at private facilities. If increasing gonorrhea testing is also occurring at private clinics in North Dakota, this may explain why gonorrhea incidence is increasing.

In addition to the increasing gonorrhea among minority populations, the level of partner services provided can also impact the incidence of gonorrhea in the community. The percent of female cases reported is greater than that of males, but it is suspected that there are many infections that are undiagnosed among males. Partner services are provided for all individuals diagnosed with gonorrhea in North Dakota.

Syphilis

In 2014, the case count and rate for syphilis was the highest recorded since 1995, with 50 cases reported. This decreased slightly in 2015, with 43 total cases of syphilis reported. Of cases reported, 29 were early stage (primary, secondary, or early latent stages) of syphilis, which is infectious.

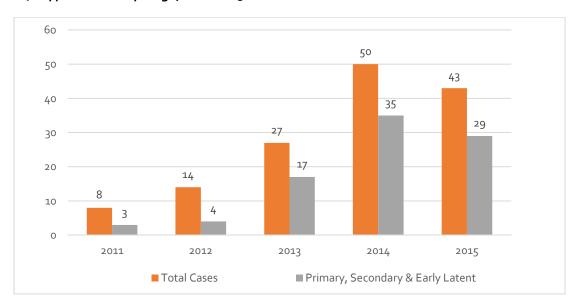


Figure 27. Syphilis cases by stage, 2011-2015

Gender

In 2015, 31 cases (72 percent) were reported among males, consistent with the percentage of 2014 cases. Female cases decreased by 40 percent from 2014. Primary and secondary syphilis cases are diagnosed based on the presence of symptoms at time of testing. Early latent is diagnosed based on most likely exposure occurring within the last 12 months in the absence of symptoms. Because outward signs of infection in females are often not visible, it is difficult to diagnose the early, infectious stage of syphilis in females.



Figure 28. Number of syphilis cases by gender, 2011-2015

Age

In 2015, the average age of cases in all stages in 2015 was 30.2 years. In contrast to gonorrhea and chlamydia, this continues an overall trend of a decreasing average age of syphilis cases.

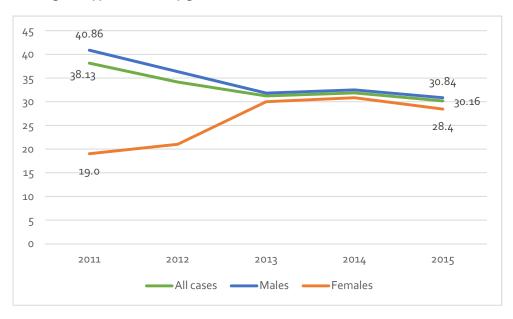


Figure 29. Mean age of syphilis cases by gender, 2011-2015

10
9
8
7
6
5
4
3
2
1
0
<10 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-54 55+

Male Female

Figure 30. Syphilis cases by age and gender, 2015

Race

In 2015, 20 syphilis cases were reported in white individuals, 12 were reported in American Indian/Alaskan Natives, and 4 were reported in Black/African Americans. The rates of syphilis among the latter two groups were similar in 2014, following a 60 percent decrease in cases reported in American Indian/Alaskan Natives from the previous year.

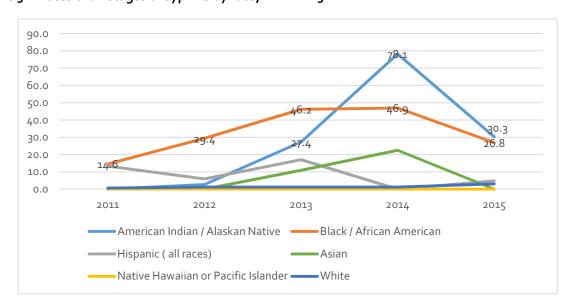


Figure 31. Rates of all stages of syphilis by race, 2011-2015

Geography

Syphilis was reported in 10 counties in 2015. The number of cases ranged from one to ten per county. Although the number of counties has been consistent since 2013, three of the counties reporting cases in 2015 did not report cases in either 2013 or 2014.

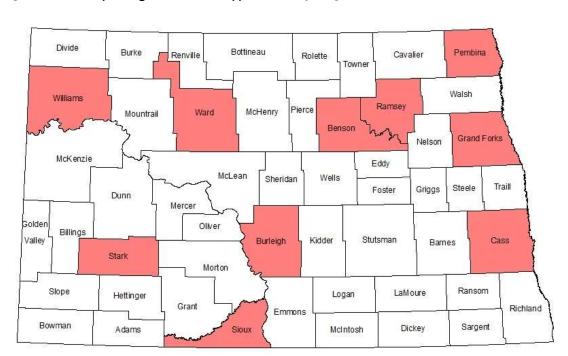


Figure 32. Counties reporting one or more syphilis cases, 2015

Factors Affecting the Number of Diagnoses

Rates of syphilis prior to 2014 had been low when compared to national rates. An outbreak between North Dakota and South Dakota began in the spring of 2013 and continued through 2014. The increased number of cases in 2014, and subsequent decrease in 2015 can be explained by this outbreak.

Viral Hepatitis

Hepatitis is the general term that means "inflammation of the liver." Many factors can cause hepatitis, including toxins, drugs, viruses, parasites, and other factors. There are several types of viral hepatitis, but hepatitis A, hepatitis B, and hepatitis C are the most common types of viral hepatitis in the U.S. and North Dakota. Hepatitis A (HAV) is transmitted via fecal-oral route primarily by a foodborne pathogen. Hepatitis B and C will be discussed in this document.

Hepatitis B Virus (HBV)

In 2015, 99 cases of HBV infection were reported in North Dakota. Morbidity is based on reported positive laboratory results meeting the CDC case definition of "Hepatitis B virus infection, chronic." Reported numbers include both confirmed and probable cases.

Gender

Of the 99 HBV-positive people reported in North Dakota, half (49) were female.

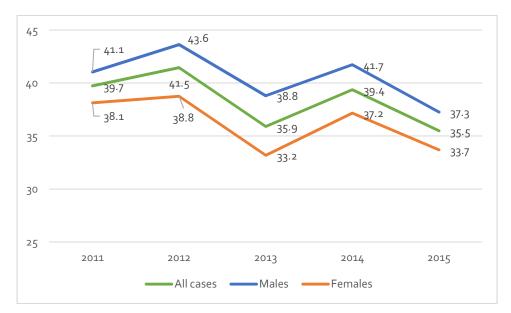


Figure 33. Reported HBV cases by gender and rate per 100,000 persons in North Dakota, 2011-2015

Age

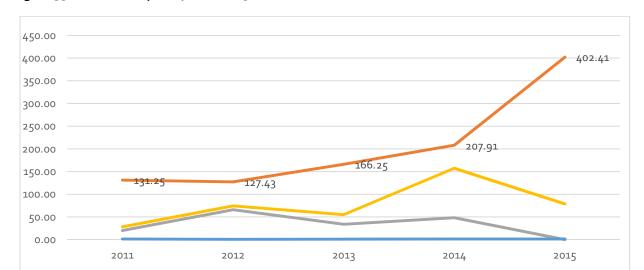
The average age of reported cases in 2015 was 35 years. The range between the youngest and oldest reported cases was 17 to 71 years. The average age of cases has decreased by nearly four years from 2011 to 2015.





Race

Among those reporting race, 61 percent were Black/African American, 10 percent were white and 7 percent were Asian. The majority of cases of HBV occur in persons who are born in countries where HBV is endemic. Since vaccination programs were started in the United States, the number of HBV infections among American born individuals has been drastically reduced.

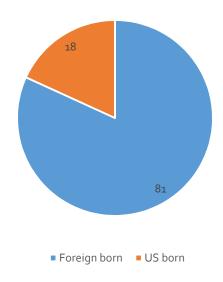


——Hispanic (all races)

Figure 35. HBV rates by race, 2011-2015

Figure 36. HBV cases by country of birth, 2015

Black / African American



-White

Asian

Hepatitis C Virus (HCV)

In 2015, North Dakota received 1,063 reports of people newly identified as having a positive laboratory result that indicates past or present hepatitis C virus (HCV) infection.

Gender

Of the 1,063 HCV-positive reports, 55 percent were male. Male cases increased by 4 percent since 2014 and female cases increased 20 percent in the same time period.

■ Male ■ Female

Figure 37. HCV cases by gender, 2011-2015

Age

HCV infections in North Dakota are predominantly an adult infection. Newly diagnosed cases in 2015 were divided roughly in thirds: 25 to 34 year olds, 35 to 54 year olds, and those over 55. Individuals under 25 accounted for less than 5 percent of cases in 2015. The average age of cases in 2015 was 40 years.

Figure 38. HCV cases by age, 2011-2015

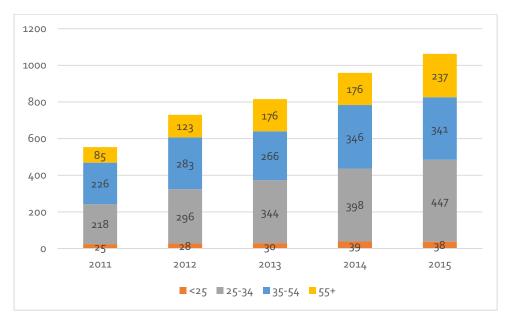
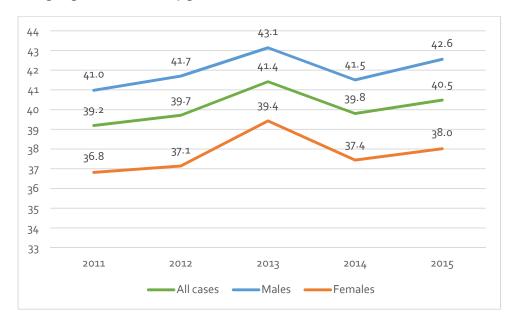


Figure 39. Average age of HCV cases by gender, 2011-2015



Race

Race data is unknown or unavailable for over half of cases since 2011. In 2015, only 421 of 1,063 reported a race. Among those, 27 percent were white and 10 percent were American Indian/Alaskan Native. Rates among American Indian/Alaskan Natives decreased in 2015 to

pre-2012 levels. Rates among Black/African American individuals doubled from 60 to 120 cases per 100,000 individuals. Other races did not change significantly from prior years.

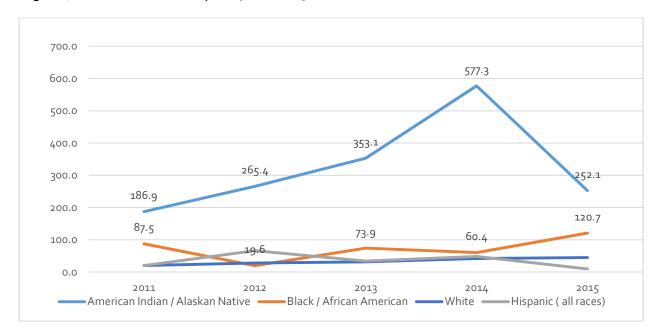


Figure 40. HCV incident rate by race, 2011-2015

Geography

Thirty-nine counties reported cases of HCV, similar to previous years. Cases per county ranged from 0 to 206, with a median of 3.

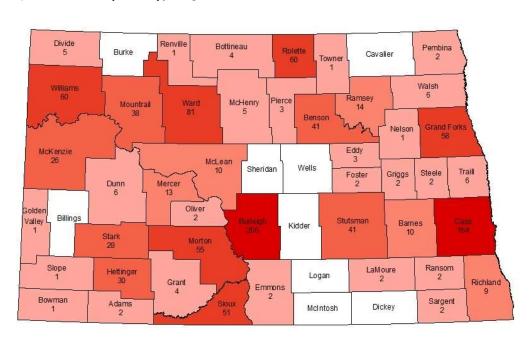


Figure 41. HCV cases by county, 2015

Factors Affecting the Number of Diagnoses

There is no vaccine for Hepatitis C. Nationally, most people become infected with HCV by sharing needles or other equipment to inject drugs. Current and former injection drug users, including those who injected only once many years ago, are at risk. Although increases in injection drug use may be partially responsible for corresponding increases in HCV cases, another factor is changing screening recommendations. In 2012, the CDC augmented recommendations for HCV screening among persons born during 1945-1965, a population with a disproportionately high prevalence of HCV.

Tuberculosis (TB)

Tuberculosis in North Dakota increased dramatically in 2012 due to an outbreak, but has since returned to the pre-existing average. In 2014, 15 cases of TB were reported. This decreased to nine in 2015.



Figure 42. Active tuberculosis cases and incident rate per 100,000 persons, 2011-2015

Gender

In 2015, six cases (67 percent) were reported among males.

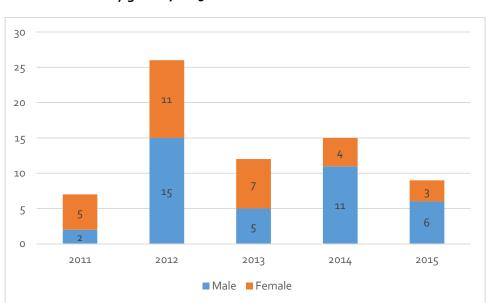


Figure 43. Tuberculosis cases by gender, 2015

Age

The average age of TB disease cases has increased by nearly 20 years from 2011 to 2015. Most of this change is driven by an increased age of female cases. The average age for 2015 was 48.7 in females and 42.7 in males.

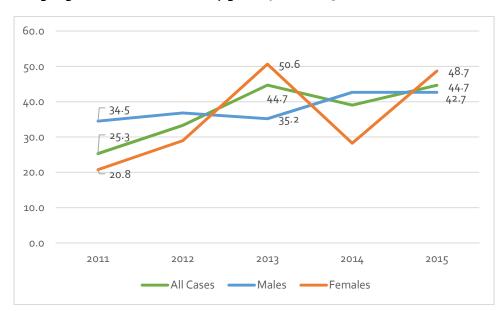


Figure 44. Average age of tuberculosis cases by gender, 2011-2015

Race

Although incidence of TB in North Dakota is low, cases that are reported demonstrate a racial disparity. The majority of TB cases in North Dakota are from a racial or ethnic minority. In 2015, four cases (44 percent) were reported among Black/African Americans, three cases (33 percent) among Asians, and two cases (22 percent) among whites. No cases were reported in American Indian/Alaskan Natives in 2015, down from four in each of the two previous years.

Figure 45. Number of active tuberculosis cases born in the US and foreign countries, 2011-2015

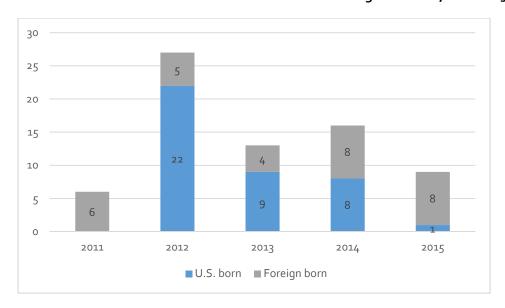
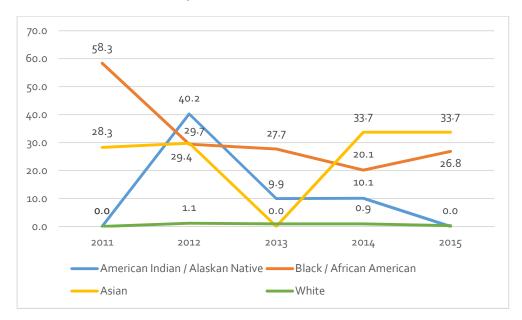


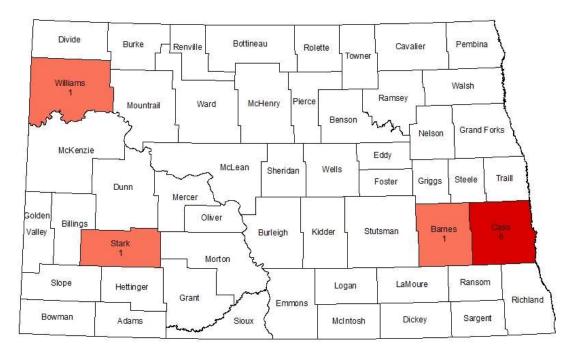
Figure 46. Tuberculosis incident rates by race, 2011-2015



Geography

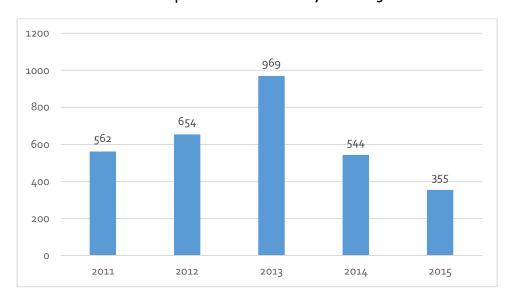
In 2015, nine TB cases were reported from four counties: Barnes, Cass, Stark, and Williams.

Figure 47. Tuberculosis cases by county, 2011-2015



Latent Tuberculosis Infection (LTBI)

Figure 48. Latent tuberculosis cases reported in North Dakota, 2011-2015



SECTION 2: SERVICE DELIVERY IN NORTH DAKOTA

Question 1: What are the characteristics of those receiving services from HIV/HCV Counseling, Testing, and Referral (CTR) Sites?

Section Highlights

- In contracted counseling and testing sites (CTR), 4,842 HIV tests were conducted in 2015. Five persons tested positive.
- Of the 4,842 tests performed, 2,147 (44.3 percent) were male and 2,679 (55.7 percent) were female.
- The majority of patients tested were white; however testing rates were highest among Black/African Americans, where the rate of testing was 3,393.7 tests per 100,000 persons.
- The majority of persons tested for HIV reported unprotected sexual activity as their risk factor (91 percent). Fifteen percent identified as MSM, 9 percent as an Injection Drug User (IDU), and 13 percent as having had sex with an IDU.
- In 2015, CTR sites tested 2,033 people for Hepatitis C. Of those, 109 persons tested positive.
- The majority of patients tested for HCV were white, however testing rates were highest among Black/African Americans, where the rate of testing was 1,066 tests per 100,000 persons.
- The most reported risk factor for those tested for HCV was sex with an IDU at 27 percent.

HIV & HCV Counseling, Testing, and Referral Program

HIV/AIDS Counseling, Testing, and Referral Data

The NDDoH funds 22 free, confidential HIV/HCV testing and counseling sites and has contracts with all sites to provide rapid testing and subsequent confirmatory testing or referral. Participants complete risk assessments as part of a testing visit or during outreach. In 2015, 4,842 HIV tests were conducted. Five persons tested positive.

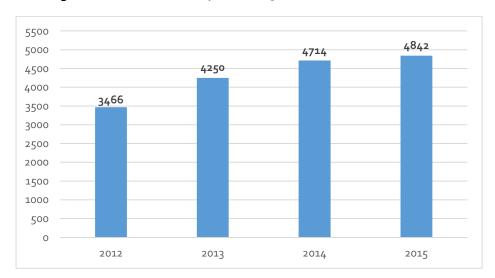


Figure 49. HIV testing conducted at CTR sites, 2012-2015

Gender

Of the 4,842 tests, 2,147 (44.3 percent) were male and 2,679 (55.7 percent) were female. Sixteen tests were reported with unknown or clients refusing to identify their gender. Two of the females tested were transgender male to females. Of the five that tested positive, two were male and three were female.

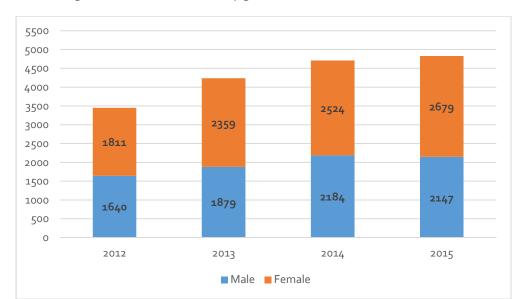


Figure 50. HIV testing conducted at CTR sites by gender, 2012-2015

Age

The majority of people tested were between the ages of 15 and 29. This is consistent with the same age groups with the highest number of incident cases of HIV in North Dakota.

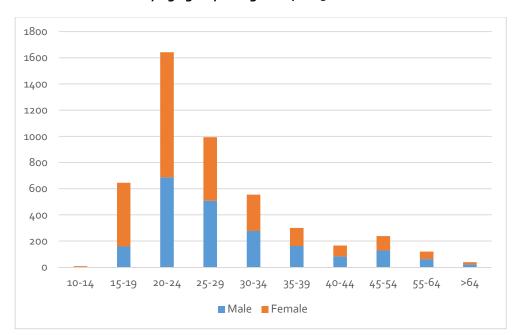


Figure 51. HIV tests at CTR sites by age group and gender, 2015

Race

In 2015, North Dakota CTR sites tested 506 Black/African Americans. There were 3,598 white and 514 American Indian/Alaskan Natives clients. Testing rates and incident rates of HIV are highest among Black/African Americans.

4000 3393.7 3500 3071 2992.5 3000 2254.5 2500 2000 1500 1000 500 2012 2013 2014 2015 White American Indian/Alaskan Native Black/African American

Figure 52. HIV testing at CTR sites rates by race, 2012-2015

Geography

At the 22 state-funded CTR sites, residents in 44 of 53 counties were reported to have received an HIV test.

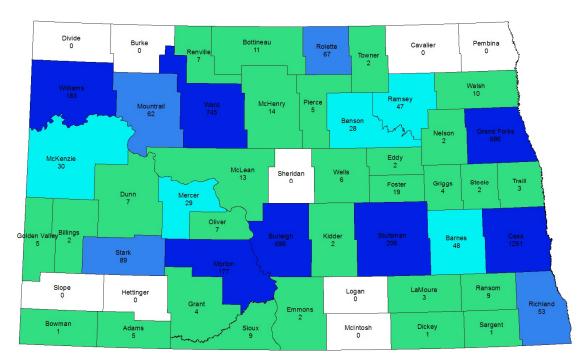


Figure 53. HIV testing at CTR sites by county, 2015

Risk Factors

The risk factor most commonly identified over the past three years is unprotected sex, with 91 percent tested in 2015 reporting this risk factor. Thirteen percent of patients reported having sex with an injection drug user as their reason for seeking testing, followed with 9 percent identifying as IDU. Only 15.7 percent of all males tested identified as MSM.

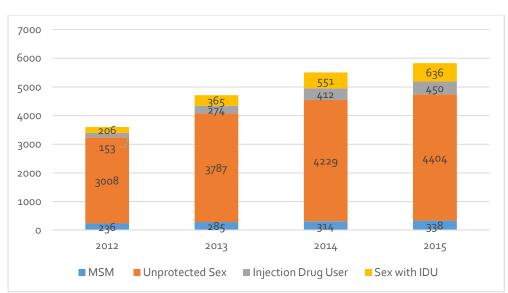


Figure 54. HIV testing at CTR sites by risk factor, 2012-2015

HCV Counseling, Testing and Referral Data

In June of 2013, rapid testing was instituted in CTR sites. This has dramatically increased the number of patients tested. In 2015, 2,033 test were performed, compared to 290 just three years before.

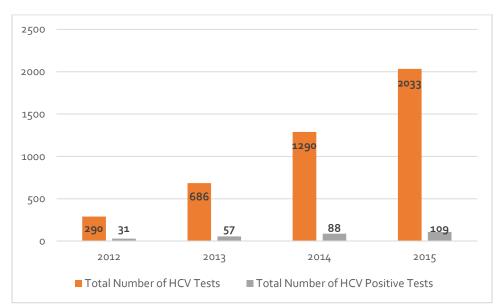


Figure 55. HCV testing at CTR sites, 2012-2015

Gender

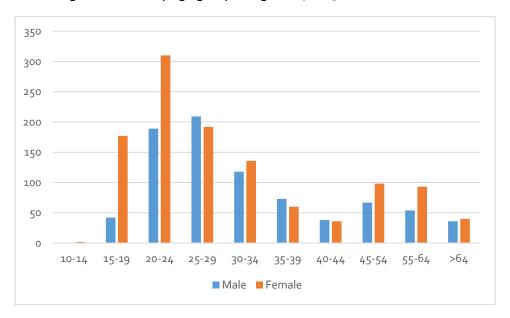
In 2015, 853 (42 percent) males and 1,175 (58 percent) females were tested for HCV at CTR sites. Of those that were positive for hepatitis C, 53 percent were female.



Figure 56. HCV testing at CTR sites by gender, 2012-2015

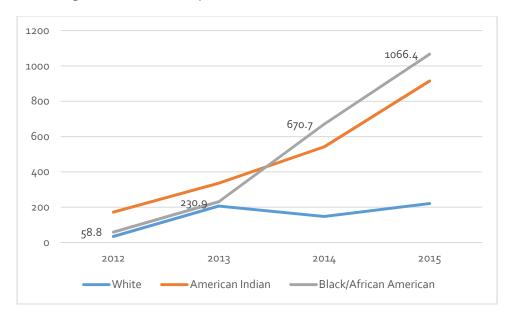
Age

Figure 57. HCV testing at CTR sites by age group and gender, 2015



Race

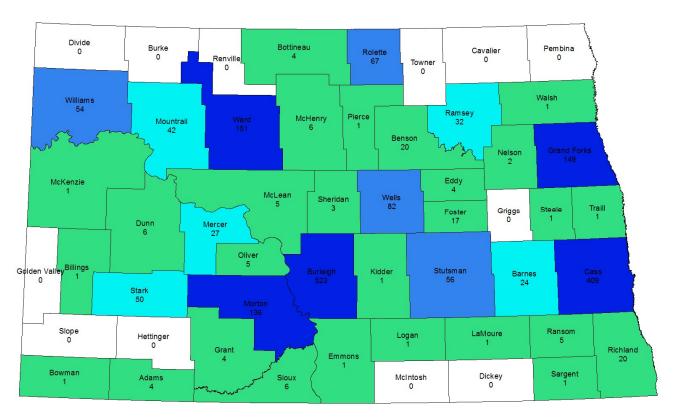
Figure 58. HCV testing at CTR sites rates by race, 2015



Geography

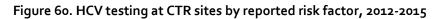
Residents of 41 of 53 counties were reported to have received an HCV test.

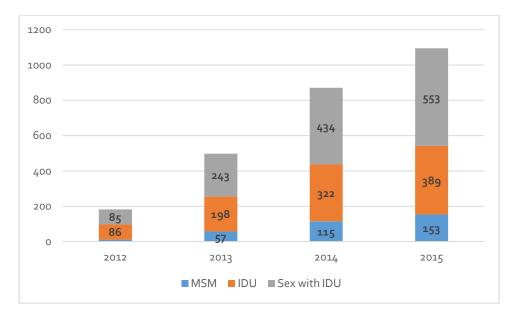
Figure 59. HCV testing at CTR sites by county, 2015



Risk Factors

The risk factor most commonly identified over the past three years continues to be sex with an injection drug user, with 27 percent of persons tested in 2015 reporting this risk factor. Nineteen percent of patients report being injection drug users, and the least reported risk factor is MSM, at 7.5 percent.





Question 2: What are the characteristics of those receiving services from Ryan White Part B?

Section Highlights

- North Dakota receives Ryan White Part B funds for the delivery of essential services to individuals and families with HIV disease.
- In 2015, 11 case managers served 228 clients with Part B services, including medication assistance, medical and non-medical case management, mental health services, emergency financial assistance, transportation services, and other support services.

Ryan White Part B

The Ryan White HIV/AIDS Program (RW) assists HIV positive individuals with the cost of medical care, treatment, and support services. As of December 31, 2015, the Ryan White Program served 168 (40 percent) out of 422 PLWH living in North Dakota. The number of Ryan White clients enrolled in the program has increased each year. In 2015, 228 unduplicated clients were enrolled in the program at some point during the year. The increase in recent years can be attributed to increase in population due to positive economic activity. In 2015, the program raised the eligibility threshold from 300 percent to 400 percent of the federal poverty level (FPL), and this allowed additional 20 clients (10 percent) to enroll or remain on the program.

Gender

Since 2012, the number of females receiving Ryan White services has nearly doubled. Male enrollment during that time has grown by almost 50 percent. Females now account for one-third of RW clients.

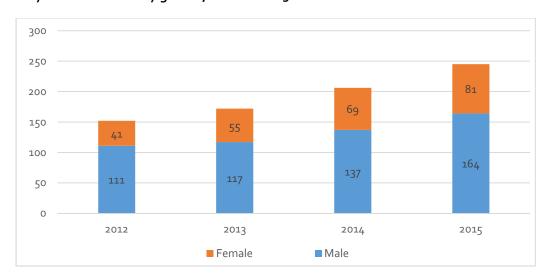


Figure 61. Ryan White clients by gender, FY 2012-2015

Age

The majority of clients served by the Ryan White program are between the ages of 25 and 44. This has been consistent for several years. Over the past four years, the greatest increase in the number of clients is in the 35 to 39 age group. The average age for RW clients is 44, which is higher than the average age of PLWH living in North Dakota.

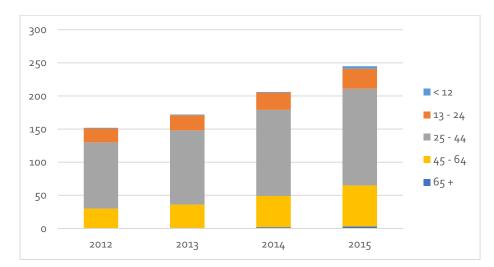


Figure 62. Ryan White clients by age group, FY 2012-2015

Race

From 2012 to 2015, the number of RW clients has decreased from 67 to 52 percent, while the number of Black/African American clients has increased from 23 to 40 percent. Surveillance data shows that Black/African American persons are disproportionately affected by HIV. The rate of Black/African American PLWH enrolled in the program is 34 times higher than the rate of white PLWH served.

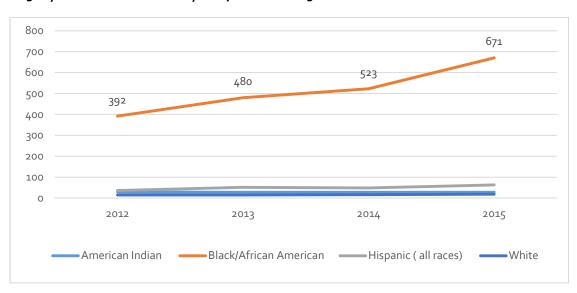


Figure 63. Ryan White clients rate by race, FY 2012-2015

Geography

Table 5. Ryan White clients served by region and case management site, CY 2012-2015

Case Management Agency	2012	2013	2014	2015
Western Region	6	9	12	17
SWDHU - Dickinson	3	6	8	10
UMDHU - Williston	2	2	3	6
UMDHU - Stanley	1	1	1	1
Southcentral Region	31	40	47	56
Bismarck Burleigh Public Health	19	27	34	43
Central Valley Health Unit	7	7	7	7
Custer Health	5	6	6	6
Northcentral Region	14	21	24	28
First District Health Unit	12	18	20	24
Lake Region District Health	2	3	4	4
Eastern Region	90	106	114	127
Fargo Cass Public Health	67	80	87	99
Grand Forks Public Health	20	23	24	25
Richland County Health	2	2	2	2
Southeastern ND Community Action*	1	1	1	1
Total Number of Clients Enrolled	141	176	197	228

^{*}SENDCAA provides comprehensive case management to one client and provides housing case management to multiple clients; however, those clients are fully managed at Fargo Cass Public Health Unit (FCPH), and are counted under FCPH.

ADAP

The AIDS Drug Assistance Program (ADAP) provides medication assistance to uninsured and underinsured RW clients. Medications on the ADAP formulary are reimbursed to contracted pharmacies at 100 percent up to the Medicaid reimbursed rate. Pharmacies use Medicaid Managed Information System for claims submission in real time.

The number and scripts dispensed, and overall total cost, have decreased significantly since the implementation of Medicaid Expansion and Qualified Health Coverage through the Federally Facilitated Marketplace. Figure 64 show the number of fills per fiscal year (April 1 through March 31). There was a decrease in number of fills in 2014 compared to 2013, and the annual cost per client served has decreased from \$31,372.80 in 2012 to \$25,262.74.

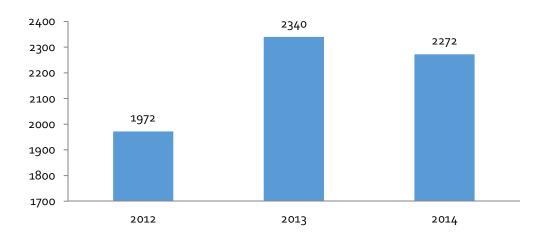


Figure 64. ADAP medication fills by year, FY 2012-2014

HIV Care Continuum

The HIV care continuum is a model that outlines the steps of HIV medical care from initial diagnosis to achieving the goal of viral suppression, and indicates the proportion of individuals living with HIV who are engaged at each stage. The continuum has the following stages: diagnosis of HIV infection, linkage to care, retention in care, receipt of antiretroviral therapy, and achievement of viral suppression. As various obstacles contribute to poor engagement in HIV care and limit the effectiveness of efforts to improve health outcomes, the care continuum is used to better identify gaps in HIV services and develop strategies to improve engagement in care and outcomes for PLWH.

The CDC currently uses two different continuums. The HIV prevalence-based continuum shows steps of the continuum as a percentage of the total number, or the prevalence, of PLWH. The diagnosis-based continuum shows steps as a percentage of the number of PLWH who were only diagnosed. For more comprehensive and inclusive data, North Dakota, as a low-incidence state, has developed the prevalence-based continuum.

The steps of the continuum are for PLWH living in North Dakota as of December 31, 2015. The measurement year is the calendar year 2015. The steps are as follows:

- HIV-Diagnosed: number of prevalent HIV cases; prevalent cases include the number of newly diagnosed HIV cases in North Dakota, as well as previously diagnosed HIV cases who moved to the state, and were living in North Dakota as of December 31, 2015
- Linked to Care: the number of PLWH in the calendar year 2015 that had one or more viral load or CD4 test after their diagnosis date
- Retained in Care: the number of PLWH with one or more viral load or CD₄ labs in the measurement year
- Antiretroviral Use: number of PLWH who have a documented antiretroviral therapy (ART) prescription in the Maven surveillance system
- Viral Load Suppression: number of PLWH whose most recent HIV viral load within the measurement year was less than 200 copies /mL.

Limitations: HIV is a reportable condition in North Dakota, and all viral load and CD4 lab tests are electronically reported to the NDDoH. However, NDDoH does not perform medical chart reviews on PLWH to determine all HIV related medical visits or antiretroviral use. This contributes to possible underreporting of the number of individuals linked and retained in care, and to underreporting of individuals receiving ART. The number of individuals prescribed ART is determined by using RW ADAP reimbursed claims data. Therefore, only individuals who are

on RW and whose medications are reimbursed through ADAP, are reported as receiving ART. This excludes individuals not on RW, as well as those who are on RW but whose medications are reimbursed through primary coverage (i.e., private insurance, Medicaid or Medicare).

As of December 31, 2015, there were 424 PLWH in North Dakota. Of those, 168 (40 percent) were enrolled in RW. Eighty-one percent of all PLWH are linked to care and reported at least one medical visit since their diagnosis. Seventy four percent were retained in care by having a medical visit in 2015. Sixty-four percent were receiving ART, and 59 percent were virally suppressed. Compared to the national rates (Figure 2), North Dakota has significantly higher rates along each stage of the continuum. The national suppression rate is 30 percent, whereas the overall suppression rate for North Dakota is 59 percent.

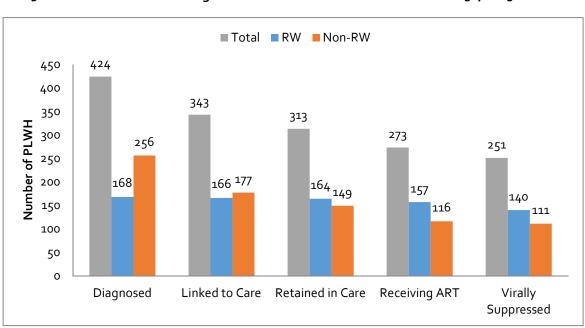


Figure 65 — Number of Persons Living with HIV in North Dakota as of December 31, 2015

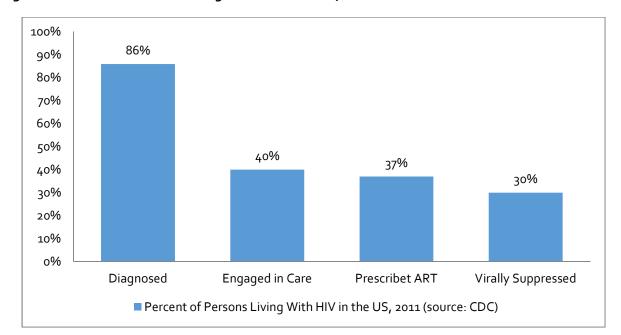


Figure 66—Percent of Persons Living with HIV in the US, 2011

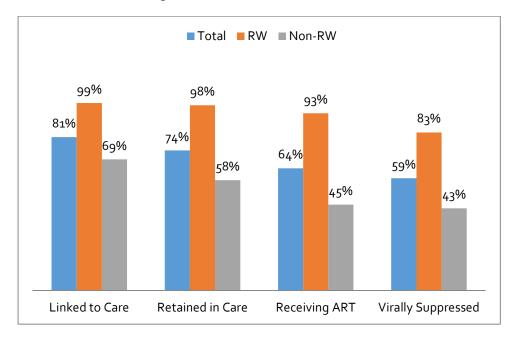
Source: CDC (Bradley H, et al. MMWR 2014; 63:1113-7)

There is a significant disparity between the PLWH not enrolled in RW versus those enrolled (Figure 65). Non-RW PLWH, compared to RW clients, were almost half as likely to be engaged in care along each step of the continuum, with half the rate of viral suppression, and thus much poorer medical and health outcomes. Sixty-nine percent of non-RW PLWH are linked to care, and only 43 percent are virally suppressed, compared to 98 percent of RW clients who are retained in care and 83 percent who are virally suppressed. Looking closely at the unsuppressed RW clients, the number seems to be higher than it truly, likely because in many instances, clinicians will stop ordering viral loads and only order CD4 counts to monitor the immune system health on those clients that have been virally suppressed for a period of time and are adherent to their treatment.

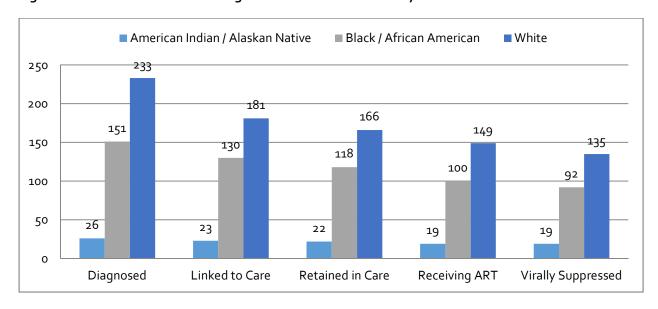
The greatest obstacle for PLWH seems to be the initial step of getting linked to care, where only 69 percent have had a medical visit within 12 months of diagnosis. Once the clients were linked to a provider, 84 percent continued to see their provider regularly, and 73 percent of those retained in care were virally suppressed.

Reaching viral load suppression is important for several reasons. Viral suppression ensures that the health of the person is maintained or restored. It also minimizes or eliminates short or long-term damage caused by the virus, and lowers the risk of HIV transmission since there is less amount of virus the blood and body fluids.

Figure 67—Percent of Persons Living with HIV in North Dakota as of December 31, 2015



Disparities by Race Figure 68—Number of Persons Living with HIV in North Dakota by Race



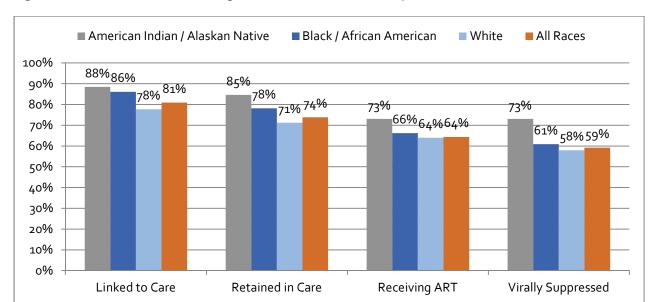
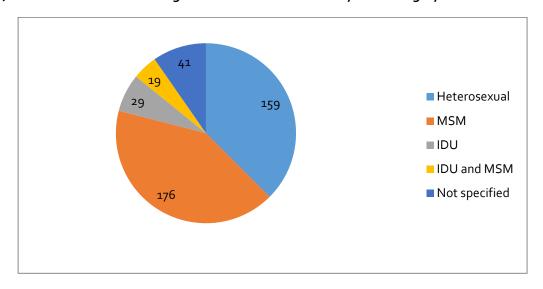


Figure 69—Percent of Persons Living with HIV in North Dakota by Race

There does not seem to be a racial disparity among PLWH living in North Dakota for access and retention in care. Black or African American PLWH have viral suppression rate of 61 percent, which is slightly higher than the viral suppression for White PLWH. Black/African American women have a have a higher viral suppression percent (67 percent) compared to Black/AA men (55percent). American Indians PLWHs have an even higher rate of viral suppression of 73percent.





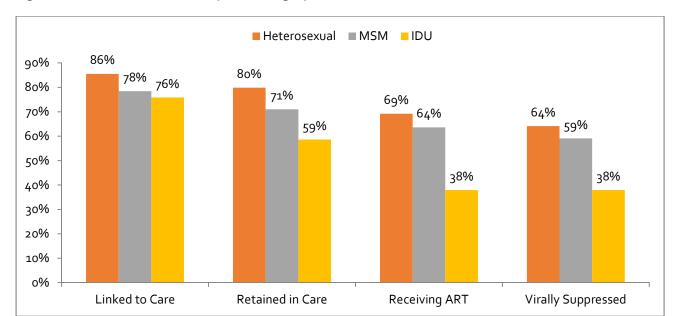


Figure 71—HIV Care Continuum by Risk Category

The majority (42 percent) of PLWH living in North Dakota as of December 31, 2015, were men who have sex with men (MSM). Thirty seven percent are heterosexual, and 10 percent did not have a specified risk category. Seven percent reported IDU as a risk factor, and 4 percent reported both IDU and MSM risk factors.

Looking at the care continua for each risk category, MSM and IDU are more likely to be out of care than a heterosexual PLWH. Seventy-six percent of IDU, and 78 percent of MSM are linked to care, compared to 86 percent of heterosexual PLWH. The highest disparity is seen with IDU PLWHs, where only 38 percent of individuals are virally suppressed, compared to 64 percent of heterosexual and 59 percent of MSM PLWHs.

The HIV Care Continuum provides a model to monitor progress toward the objectives outlined in the National HIV/AIDS Strategy (NHAS). The model will also be used by the CPG for planning and prioritizing goals and resources to address the needs and disparities of PLWH in North Dakota. The CPG will develop appropriate interventions to address the racial and socioeconomic disparities, as well as determine necessary re-engagement activities to improve outcomes at each state of the care continuum.

The existing services, such as partner services, additional testing for comorbidities, educational opportunities regarding care and treatment, and prevention with positives activities will be reevaluated to assess their effectiveness and potential areas for improvement.